4. (once amended) An optical amplifier comprising multiple fiber sections, a first fiber section being positioned at the input of the amplifier, and a second section being positioned at the output of the amplifier, wherein the second fiber section comprises a doped fiber core and a cladding layer surrounding the core, the mode field diameter of the fiber being greater than 10 μm, and the magnitude of the radial variation of refractive index difference between the core and the cladding layer being selected such that the cut- off wavelength at which the fiber becomes single mode lies in the range 1000-1550nm, and wherein the first fiber section has a lower mode field diameter than the second fiber section.

B2

7. (twice amended) An optical transmission system comprising a transmitting node, a receiving node and an optical fiber link between the nodes, wherein the link includes one or more amplifying repeaters, each comprising an amplifier having a doped fiber core and a cladding layer surrounding the core, the mode field diameter of the fiber being greater than 10 μm and the refractive index difference between the core and the cladding layer being selected such that the cut- off wavelength at which the fiber becomes single mode lies in the range 1000-1550nm.

B3

8. (once amended) An optical transmission system comprising a transmitting node, a receiving node and an optical fiber link between the nodes, wherein the link includes one or more amplifying repeaters, each comprising an amplifier having two or more fiber sections, a first fiber section being positioned at the input of the amplifier, and a second section being positioned at the output of the amplifier, wherein the second fiber section comprises a doped fiber core and a cladding layer surrounding the core, the mode field diameter of the fiber being greater than 10 μm and the refractive index difference between the core and the cladding layer being selected such that the cut- off wavelength at which the fiber becomes single mode lies in the range 1000-1550nm, and wherein the first fiber section has a lower mode field diameter than the second fiber section.

B4

9. (twice amended) A method of designing an optical fiber comprising a core and cladding, for use in an optical amplifier, comprising the steps of:

B5 selecting a core diameter such that the mode field diameter of the fiber is greater than 10 μm and such that low frequency attenuation is below desired limits;

selecting a refractive index difference between the core and the cladding layer such that the cut-off wavelength at which the fiber becomes single mode lies in the range 1000-1550nm and such that bending losses are below desired limits.

REMARKS

This paper responds to the Office Action mailed September 6, 2002 with reference to the above-identified application.

Claims 1 to 9 are pending in this application. Claims 1-2, 4-5 and 7-9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Brown (US 6,317,549) in view of Imoto (US 5,742,722).

Claims 3 and 6 have been considered allowable if rewritten in independent form.

All independent claims have been amended essentially to introduce the limitation of claims 3 and 6. However, a minimum mode field diameter of 10 μm has been specified, rather than the range of 10 μm to 14 μm appearing in claims 3 and 6.

The instant invention uses gain fiber with mode field diameter higher than previously contemplated, in combination with a particular selection of refractive index properties. It is therefore appropriate for the broadest claims to specify a lower limit only for the mode field diameter. Providing fiber with high mode field diameter reduces low frequency attenuation as previously argued.

The statement of reasons for the indication of allowable subject matter in paragraph 4 of the Office Action applies equally to the claims as amended by this response, in